IN THE CLAIMS

1. (previously presented) A method of scanning a volume in an MRI system, comprising:

a. creating a $B_0$ magnetic field;

b. creating a $B_0$ map for each slice of a scan volume from the $B_0$ magnetic field, each scan slice having a plurality of positive and negative scan slice pixels;

c. obtaining a first frequency of RF pre-pulses for each scan slice;

d. calculating a median value of the $B_0$ magnetic field from the $B_0$ map for each scan slice;

e. calculating percentages of the positive and negative scan slice pixels in each scan slice.

2. (previously presented) A method of imaging a scan volume with an MRI system, comprising:

a. generating a $B_0$ field map of each scan slice of a scan volume by measuring a $B_0$ magnetic field over each scan slice of the scan volume, each scan slice having a plurality of positive and negative scan slice pixels;

b. obtaining a first frequency of RF pre-pulses;

c. calculating a median value of the $B_0$ magnetic field over each scan slice, the calculation being done using the $B_0$ field maps;

d. calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the $B_0$ field map for each scan slice, wherein a

positive scan slice pixel is defined as a scan slice pixel with positive value in the $B_0$ field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the $B_0$ field map;

e. wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

i. calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by using the median value of the $B_0$ magnetic field over the scan slice calculated at step c;

otherwise:

ii. improving shimming of the $B_0$ magnetic field with a shim protocol; and

iii. repeating steps a through e; and

f. obtaining an MRI image of each scan slice, wherein the MRI image of a scan slice is obtained using RF pre-pulses at the second frequency for the scan slice.

3. (previously presented) The method of claim 2 wherein the step of calculating a second frequency of RF pre-pulses for a scan slice is done by adding the median value of the $B_0$ magnetic field over the scan slice to the first frequency of RF pre-pulses.

4. (previously presented) The method of claim 1 further comprising applying a plurality of RF pre-pulses in order to suppress magnetic resonance signals from hydrogen nuclei in fat molecules present in the scan volume.

5. (currently amended) The method of claim 1 further comprising applying a plurality of RF pre-pulses ~~are used~~ in order to suppress magnetic resonance signals from hydrogen nuclei in macromolecules present in the scan volume.

6. (currently amended) The method of claim 1 further comprising applying a plurality of RF pre-pulses ~~are used~~ in order to suppress magnetic resonance signals from hydrogen nuclei in water molecules present in the scan volume.

7. (previously presented) The method of claim 2 wherein the step of obtaining an MRI image of a scan slice comprises the steps of:

a. applying

i. RF pre-pulses at second frequency for the scan slice; and

ii. RF pulses at transmit frequency to the scan slice;

b. measuring magnetic resonance signals from the scan slice; and

c. processing the magnetic resonance signals to obtain an MRI image of the scan slice.

8. (previously presented) A method of imaging a scan volume in an MRI system, comprising:

a. generating a $B_0$ field map of each scan slice of a scan volume by measuring a $B_0$ magnetic field over each scan slice of the scan volume and storing the $B_0$ field map in a database, each scan slice having a plurality of positive and negative scan slice pixels;

b. obtaining a first frequency of RF pre-pulses for each scan slice;

c. calculating median value of the $B_0$ magnetic field over each scan slice, the calculation being done using the $B_0$ field maps stored in the database;

d. calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the $B_0$ field map for each scan slice, wherein a positive scan slice pixel is defined as a scan slice pixel with positive value in the $B_0$ field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the $B_0$ field map;

e. wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

i. calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by adding the median value of the $B_0$ magnetic field over the scan slice calculated at step c to the first frequency of RF pre-pulses calculated at step b;

otherwise:

ii. improving shimming of the $B_0$ magnetic field with a shim protocol; and

iii. repeating steps a through e;

f. obtaining an MRI image of each scan slice using RF pre-pulses at second frequency for that scan slice;

g. storing the MRI image of each scan slice obtained at step f in the database; and

h. displaying the MRI images stored in the database on a display device.

9. (previously presented) The method of claim 8 wherein the RF pre-pulses are used in order to suppress magnetic resonance signals from hydrogen nuclei in fat molecules present in the scan volume.

10. (previously presented) The method of claim 8 wherein the step of obtaining an MRI image of a scan slice comprises the steps of:

a. applying

i. RF pre-pulses at second frequency for the scan slice; and

ii. RF pulses at transmit frequency to the scan slice;

b. measuring magnetic resonance signals from the scan slice; and

c. processing the magnetic resonance signals to obtain an MRI image of the scan slice.

11. (currently amended) An MRI system comprising:

a. a polarizing magnet configured to produce a high intensity magnetic field called a $B_0$ magnetic field;

b. a set of shimming coils configured to improve homogeneity of the $B_0$ magnetic field;

c. a magnetic field detector configured to measure a $B_0$ magnetic field distribution from the $B_0$ magnetic field;

d. a set of gradient coils configured to produce a gradient magnetic field superposed on the $B_0$ magnetic field;

e. a transmitter configured to generate RF pulses and RF pre-pulses wherein frequency of RF pre-pulses is specific for each scan slice, each scan slice having a plurality of positive and negative scan slice pixels;

f. a radio frequency receiver configured to detect magnetic resonance signals;

g. a processing module comprising:

i. a module configured to calculate the median ~~of the~~of a $B_0$ magnetic field distribution map over each scan slice, wherein the $B_0$ magnetic field distribution map is generated from the $B_0$ magnetic field distribution;

ii. a module configured to calculate percentages of the positive and negative scan slice pixels in each scan slice, wherein positive scan slice pixels are defined as scan slice pixels with positive $B_0$ magnetic field values, and wherein negative scan slice pixels are defined as scan slice pixels with negative $B_0$ magnetic field values;

iii. a module configured to calculate a second frequency of RF pre-pulses for each scan slice by adding the median ~~value of a~~value of the $B_0$ magnetic field distribution map over the scan slice to a first frequency of RF pre-pulses, the first frequency of RF pre-pulses being obtained by a standard procedure; and

iv. a module configured to process magnetic resonance signals from a scan slice to obtain an MRI image of each scan slice; and

h. a database comprising:

i. a storage unit configured to store $B_0$ field distribution maps;

ii. a second storage unit configured to store the median value of the $B_0$ magnetic field distribution map over each scan slice; and

iii. a third storage unit configured to store an MRI image of each scan slice.

12. (previously presented) A computer program product configured for use with a computer, the computer program product comprising a computer usable medium having a computer readable program code embodied therein generating an image using an MRI system, the computer program code performing the steps of:

a. generating a $B_0$ field map of each scan slice of a scan volume by measuring a $B_0$ magnetic field over each scan slice of the scan volume, each scan slice having a plurality of positive and negative scan slice pixels;

b. obtaining a first frequency of RF pre-pulses;

c. calculating median value of the $B_0$ magnetic field over each scan slice, the calculation being done using the $B_0$ field maps;

d. calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the $B_0$ field map for each scan slice, wherein a positive scan slice pixel is defined as a scan slice pixel with positive value in the $B_0$ field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the $B_0$ field map;

e. wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

i. calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by adding the median value of the $B_0$ magnetic field over the scan slice to the first frequency of RF pre-pulses;

otherwise:

ii. improving shimming of the $B_0$ magnetic field with a shim protocol; and

iii. repeating steps a through e; and

f. obtaining an MRI image of each scan slice, wherein the MRI image of a scan slice is obtained using RF pre-pulses at the second frequency for the scan slice.

13. (previously presented) A computer program product configured for use with a computer, the computer program product comprising a computer usable medium having a computer readable program code embodied therein acquiring an image using an MRI system, the computer program code performing the steps of:

a. generating a $B_0$ field map of each scan slice of a scan volume by measuring a $B_0$ magnetic field over each scan slice of the scan volume and storing the $B_0$ map in a database, each scan slice having a plurality of positive and negative scan slice pixels;

b. obtaining a first frequency of RF pre-pulses for each scan slice;

c. calculating median value of the $B_0$ magnetic field over each scan slice, the calculation being done using the $B_0$ field maps stored in the database;

d. calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the $B_0$ field map for each scan slice, wherein a positive scan slice pixel is defined as a scan slice pixel with positive value in the $B_0$ field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the $B_0$ field map;

e. wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

i. calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by adding the median value of the $B_0$ magnetic field over the scan slice to the first frequency of RF pre-pulses;

otherwise:

ii. improving shimming of the $B_0$ magnetic field with a shim protocol; and repeating steps a through e;

f. obtaining an MRI image of each scan slice using RF pre-pulses at second frequency for that scan slice calculated at step e;

g. storing the MRI image of each scan slice obtained at step f in the database; and

h. displaying the MRI images stored in the database on a display device.